



New Sea Wall, Kimmeridge Bay, Kimmeridge, Dorset

Observations and Recording, September 2013



Report No. 53382/3/1

December 2013

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Scheduled Monument No: 29096

Scheduled Monument Consent Ref: S00040369

Client: Smedmore Estate

Agent: Chichesters Land Agents, 33 West Borough, Wimborne, BH21 1LT

Report Author: Mike Trevarthen

Illustrations: Mike Trevarthen and Peter Bellamy

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Project Report Summary Page

Project Details			
OASIS Reference	terrains1-166860		
Project Title	New Sea Wall, Kimmeridge Bay, Kimmeridge, Dorset.		
Short Description of Project	Terrain Archaeology undertook a programme of archaeological observations and recording during the construction of a new sea wall immediately south of the slipway at Kimmeridge Bay, Kimmeridge, Dorset. The construction trench for the new sea wall exposed part of the stone facing of a former quay probably constructed by William Clavell in the early 17th century, as part of his alum works. The deposits exposed by the works all post-dated this structure and comprised a layer of beach shingle, sealed beneath later post-medieval and modern reclamation deposits.		
Project Dates	Start: 18-09-2013	End: 18-09-2013	
Previous/Future Work	Yes/no		
Project Code	53382		
Monument Type and Period	Quay (Post-medieval)		
Significant Finds	None		
Project Location			
County/District/Parish	Dorset/ Purbeck/Kimmeridge		
Site Address	Kimmeridge Bay, Kimmeridge, Dorset, BH20 5PF		
Site Coordinates	SY 9089 7880		
Site Area	c. 8m ²		
Height OD			
Project Creators			
Organisation	Terrain Archaeology		
Project Brief Originator	None		
Project Design Originator	Terrain Archaeology		
Project Supervisor	Mike Trevarthen		
Project Manager	Peter Bellamy		
Sponsor or Funding Body			
Project Archive			
Archive Type	Physical	Digital	Paper
Location/Accession No	None	Terrain Archaeology offices, pending deposition with the Dorset County Museum	Terrain Archaeology offices, pending deposition with the Dorset County Museum.
		Digital photography	Context sheets, plans, report

New Sea Wall, Kimmeridge Bay, Kimmeridge, Dorset

Archaeological Observations & Recording, September 2013

1. Introduction

1.1 Project Introduction

Terrain Archaeology was commissioned by the Smedmore Estate, through their agents, Chichester Land Agents, to undertake a programme of archaeological works during construction of a new sea wall adjoining the slipway, Kimmeridge Bay, Kimmeridge, Dorset (Figure 1). This was to reinstate a sea wall in front of a stone boathouse that collapsed in bad weather in 1989/1990.

The site lies within Scheduled Monument No. 29096, *Alum works, other multi-period industrial remains and an associated group of jetties and breakwaters, Kimmeridge Bay*.

A Heritage Impact Assessment (Terrain Archaeology 2012) was submitted as part of an application for Scheduled Monument Consent for the works. The archaeological programme was carried out in accordance with a Written Scheme of Investigation for Archaeological Observations and Recording (Terrain Archaeology 2013), and in fulfilment of Conditions attached to the grant of Scheduled Monument Consent (SMC No. S00040369) and of Condition 3 of the grant of approval of Planning Application No. 6/2011/0517 by Purbeck District Council.

'Archaeological observations and recording', also more colloquially known as an archaeological watching brief, is defined by the Institute for Archaeologists (IfA) as *"a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive"* (IfA 2008). Its purposes are: *"to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works "* and *"to provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard."* (IfA 2008).

Fieldwork was carried out on the 18th September 2013 by Mike Trevarthen.

Terrain Archaeology wishes to acknowledge the assistance and cooperation of Piers Chichester (Chichester Land Agents) and Ken Selby (machine operator) and Ian Cuff (builder).

1.2 Brief

No written brief was issued by, or on behalf of, the Local Planning Authority.

1.3 Site Location and Topography

The site is located on foreshore of the eastern side of Kimmeridge Bay adjacent to the slipway and boathouses, at SY 9089 7880 (Figure 1).

1.4 Geology

Underlying bedrock geology is mapped as Jurassic Kimmeridge Clay Formation mudstones. No superficial geology is recorded (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>).

1.5 Archaeological and Historical Background

Known earlier prehistoric remains around Kimmeridge Bay are limited to a single Neolithic polished flint axe, found on the east side of Kimmeridge Bay, near to the slipway, prior to 1950. Iron Age and Roman activity is relatively well attested locally, however, mainly comprising evidence for shale working and salt production. Occupation sites belonging to the Iron Age and Roman periods have been identified southwest of Swalland Farm (c. 1.6 km east of the site), on the slopes of Metherhills (c. 0.4 km to the northeast), and just to the west near Gaultier Gap (set above the central part of Kimmeridge Bay). The latter site is associated with a Roman cemetery. Medieval remains mainly comprise relict field systems and lynchet terraces, although settlements formerly existed at Little Kimmeridge, Chaldecots and Smedmore. There is evidence for saltworking dating both to the Early Iron Age and the Roman periods in the form of burnt shale deposits, briquetage, vesicular slag, distinctive handmade bricks and the remains of vessel containers (Farrar 1962).

The history of industrial exploitation of Kimmeridge Bay in the historic period begins with the attempts to manufacture alum using Kimmeridge shales in the 16th century. Documentary sources indicate that this began when Lord Mountjoy and John Clavell (the owner of the Kimmeridge Estate) experimented using local shale in about 1569, but it was Clavell's son, Sir William Clavell, who commenced production on a commercial scale c. 1605 (Bettey 2001, 7-8; Brachi 2008). However, this soon ran into legal difficulties as the Crown deemed the enterprise to be in breach of a previous monopoly issued by James I. Clavell gained permission to recommence alum production, but came into conflict with the Crown once again, after which his plant was forcibly closed. A surviving document details the legal arguments Clavell presented hoping either to be granted production rights or to be or be recompensed for his work. He states that in the space of eight months he had built not only two alum houses but also a strong huge pier of stone, 100 ft long and 60 ft broad (Bettey 2001, 7-8). An inventory taken 1616(?) lists the contents of the two alum houses (Broadbent & Bellamy 2007). Clavell turned to salt manufacture and to glassmaking using local shale as fuel in 1617-1623. His glass house was found close to the quay and its remains have been excavated (Crossley 1987).

Exploitation of the shales at Kimmeridge recommenced in the 19th century. In 1848 the 'Bituminous Shale Company' obtained a lease to quarry and ship oil shale to its works at Weymouth for the production of naphtha, varnish, grease, pitch, paraffin wax and paint. In 1849 the 'Mineral Spirit Company' built a factory at Wareham to produce oil, grease and manure from Kimmeridge Shale. The Weymouth factory was closed in 1854 and shortly afterwards the Wareham works were sold. In 1858, 'Wanostrocht & Co' obtained a contract to light the city of Paris with gas from Kimmeridge shale. They converted the factory at Wareham and extended shale extraction at Kimmeridge by driving adits into the cliffs, as well as constructing a stone pier and an iron jetty. By 1862, Wanostrocht & Co were in financial difficulties and sold the business to the 'Wareham Oil and Candle Company', who survived until 1872 when the factory was destroyed by fire. In 1883, the 'Kimmeridge Oil and Carbon Company' extracted shale to make filters for the purification of sewerage but this ended in 1890. Further leases were granted until 1916, when exploitation of the shale ceased (Brachi 2008; Mansel 2000, 24).

The precise location of Clavell's alum works is not known, but a number of features perhaps associated with alum production have been identified by David Brachi (2008). Possible alum furnaces were exposed during construction of the public toilets in 1976. The stream had been artificially diverted northwestward into its present course, perhaps to control the flow of water and allow the washing of alum. Also, the glassworks were built in a former shale quarry, which may have been associated with the alum works (Brachi 2008, Crossley 1987). This stream was fed by a series of three ponds, which survive in front of the Coastguard Cottages (Trevarthen *et al.* 2011). A number of walls and stratified burnt deposits are eroding out of the shoreline, some of which appear to be associated with William Clavell's industrial works and quays (Bellamy *et al.* forthcoming).

1.6 Previous Archaeological Fieldwork

In 1976 David Brachi recorded three furnaces that were discovered during the construction of a toilet block in the upper car park at Kimmeridge Bay (Brachi 2008). The furnaces were brick-built with iron firebars. No dating evidence was recovered nor any evidence for their precise function, but it has been suggested by Brachi that these were associated with alum production. The firing pits and flues of two of these furnaces were excavated by the Dorset Alum and Copperas Project in May 2009, which suggested that these furnaces might not have been used (Trevarthen *et al.* 2010). The character of the bricks used in the construction of the flues suggests they could be 17th century in date (Bellamy *et al.* forthcoming).

The site of the 1620 glassworks was excavated in 1981-2 by David Crossley (Crossley 1987).

In 1996, AC archaeology undertook some minor investigation of the possible 17th century saltworks at the southern end of the bay (Valentin 1997). In June 1999 two trial pits were excavated by AC archaeology prior to the construction of the new Marine Centre (McMahon 1999). These revealed substantial deposits of burnt shale waste with charcoal and burnt clay between 1.35 m to over 1.65 m in depth. These deposits could not be assigned to a particular industry, but no analysis of samples was undertaken. A later wall sealing the sequence of shale waste layers was thought to be a post-medieval or early modern hut or boathouse (McMahon 1999).

In February 2010 the Dorset Alum and Copperas Industry Project recorded the eroding shoreline exposures on the east side of Kimmeridge Bay (Trevarthen *et al.* 2010). This revealed beach deposits reworked by low-energy fluvial processes, probably from the stream that runs into the northeast part of Kimmeridge Bay, before it was diverted into its present course (at some date prior to the late 1880s) at the base of the sequence. This suggests that this area initially lay on the foreshore, prior to being reclaimed. It was sealed by a deposit of burnt shale waste, which tailed out to the south suggesting it may have been related to activity to the north or northeast in the area of the excavated glassworks and the possible location of John Clavell's alum works (Crossley 1987). This shale waste deposit was sealed by a clay and stone wall structure, which may be part of the large quay or cobb destroyed in 1745 as recorded by Hutchins (1861, 556). This was sealed by dumps of redeposited burnt shale waste derived from the 19th century activities (Trevarthen *et al.* 2011).

1.7 Aims and Objectives

The aim of the archaeological programme was to establish and make available information about the archaeological resource existing on the site.

Its objectives were:

- To observe and record the all the *in situ* archaeological deposits and features revealed during the groundworks to an appropriate archaeological standard.
- To present the results in a report to the appropriate standard.

1.8 Fieldwork

The works were located at the modern edge of the terrestrial platform, at its interface with the foreshore boulder field (Plate 1). The NE-SW aligned foundation trench was mechanically excavated using a rubber tracked mini-digger fitted with a 0.5 m wide toothed bucket, and linked the concrete- and limestone slipway to the north with a relict unmortared stone wall to the south (Plate 2), the latter now supporting a more recent but partially destroyed stone boathouse (Figure 2). The trench was approximately 10 m long, 0.8 m wide and 1.4 m deep.

1.9 Methods

The methodology, scope, aims and objectives of the works was set out in a Written Scheme of Investigation (Terrain Archaeology 2013, document no. 3382/0/1).

All archaeological works were carried out in accordance with the Institute for Archaeologists *Code of Conduct and Standard and Guidance for Archaeological Watching Briefs* (IfA 2008).

A qualified, experienced archaeologist was present on-site during all excavation works. Spoil arising from the machining works was visually scanned for artefacts. The base and sides of the trench were manually cleaned where necessary prior to recording.

All features and deposits, regardless of their perceived date and archaeological significance, were recorded using components of Terrain Archaeology's system of complementary written, drawn and photographic records. These have been compiled in a stable, cross-referenced and fully indexed archive in accordance with current guidelines (AAF 2007) and the requirements of the receiving museum. A photographic record of the work was maintained in digital format, and includes aspects of its setting, conduct and technical detail.

1.10 Archive and Dissemination

The project archive, comprising written, graphic and photographic records, and appropriate background documentation, is currently stored by Terrain Archaeology under the project code 53382.

A paper copy of this report will be lodged with Dorset County Council's Historic Environment Record (HER). The HER is a publicly funded and accessible resource, and deposition of the report will place it, and the project results, in the public domain.

A digital summary of the archive will be placed with the OASIS project (www.oasis.ac.uk) under the reference code *terrains1-166860*. A digital copy of this report will be uploaded for inclusion in the Archaeological Data Service (ADS) online 'grey literature' library.

A brief report of the project will be published by Terrain Archaeology in the *Proceedings of the Dorset Natural History and Archaeological Society*. No detailed publication of the projects results is proposed.

2. Results

2.1 Natural Deposits

Natural terrestrial deposits were not encountered.

2.2 Structure 1004

The southern end of the trench terminated against the battered face a stone wall (1004), which was incompletely exposed to a depth of 1.4 m below ground level (Figure 3; Plate 3). This wall, as exposed in the trench, comprised five courses of sub-rectilinear dolomite limestone blocks, all of which were surface-oxidised to a pale yellow-brown colour. The base of the wall was not exposed. There was no evidence that the blocks had been mortared.

Immediately inshore from the trench, a further two courses of this wall face survived above those recorded in section and the wall has been re-used as a footing for more recent stone-built boathouses.

Previous research indicates this structure is probably early 17th century in date, and it may be the large quay or cobb constructed by William Clavell and destroyed by a storm in 1745 (Hutchins 1861, 556).

2.3 Beach deposit 1003

Beach shingle 1003 lapped against wall 1004, and comprised in excess of 0.5 m thickness of fine- to medium rounded and fragmented tabular shale pebbles, predominantly horizontally bedded, in a sparse matrix of finely particulated shale and shelly sand. Occasional oyster and limpet shells were present, also horizontally bedded. The layer achieved its highest elevation where it met wall 1004, and sloped gently downward to the north, away from the wall.

2.4 Reclamation and consolidation deposits

There were three deposits overlying the beach deposit lying against wall 1004 that appear to represent reclamation and consolidation deposits of post-medieval and modern date (Figure 3; Plate 4). The beach deposit 1003 was sealed beneath a layer of loose dark greyish-brown shale with variable dolomitic limestone fragments (1002), over 0.8

m thick at its thickest. It was sealed below a 0.15 m thick layer of mid grey fine shale beach shingle and small stone (1001). The uppermost deposit was a 0.55 m thick layer of mixed soil, shale waste, dolomite cobbles and pieces (1000), which also contained a number of later 20th century material including plastic, nylon rope, aluminium drinks cans, etc.

3. Finds

3.1 Finds assemblage

No artefacts of pre-modern date were present. Modern debris from layer 1000, including plastic bags, blue nylon rope, plastic coated electrical wire and aluminium drinks cans, was not collected.

4. Discussion and Conclusions

4.1 Discussion

The area of the new sea wall lay immediately north of the eroding industrial deposits previously recorded by the Alum and Copperas Project (Bellamy *et al.*, forthcoming). The deposits exposed in the sea wall trench are very different in character to these industrial deposits (Figure 4). They appear to have been much more affected by erosion as the beach deposits only survive at a much lower depth, about 0.75 m below the beach deposits to the south. It is clear that wall 1004 and the associated clay surface recorded to the south have protected the earlier industrial and beach deposits. To the north of wall 1004, none of the earlier archaeological deposits associated with William Clavell's industrial activity have survived: the deposits post-date the wall and are primarily later reclamation deposits.

Wall 1004 had a battered wall face constructed of coursed roughly shaped dolomite blocks. The base of this structure was not exposed. No bonding material was recorded but this is likely to have been clay, on the evidence of the other structures recorded in this area (Trevvarthen *et al.* 2011). This wall face can be traced as a linear stone alignment for over 25 m across the beach (Plate 5). This stone alignment has been identified as part of the 'large key or cobb' constructed by William Clavell in the early 17th century and destroyed by a storm in 1745 (Hutchins 1861, 556; Brachi 2008).

The layer of reworked burnt shale beach shingle with oyster and limpet shells (1003) built up against the face of wall 1004, post-dates the construction of this wall, but was formed at a time when it was still exposed to marine action. This is certainly later than the early 17th century, but may be 18th century or later in date. The layers of redeposited material overlying the beach shingle, probably are the result of activity to reclaim the former fringes of the beach and conceivably post-dates the mid-18th-century storm damage. The uppermost layer appears to date to the later 20th century and was probably deposited to raise, level and consolidate the area, perhaps after the 1978 storm which destroyed the adjacent boathouse.

4.2 Conclusions

The construction of the new sea wall largely disturbed levelling deposits of later post-medieval and modern date, which have low archaeological significance. However, the exposure of these deposits, when considered together with earlier archaeological recording immediately to the south, has added to our understanding of the structure of William Clavell's 17th century quay, which was probably constructed as part of his alum works.

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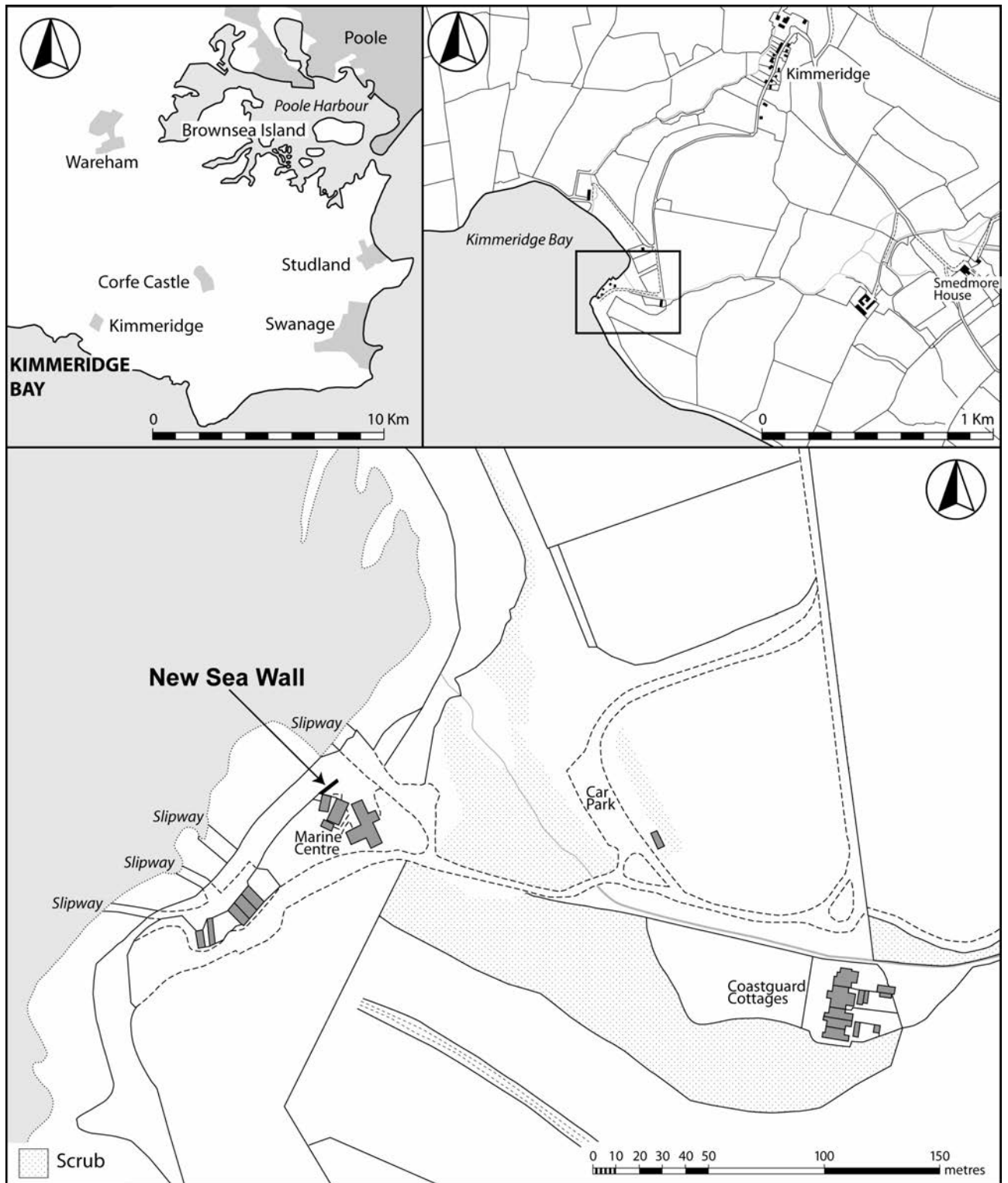


Figure 1: Site Location.

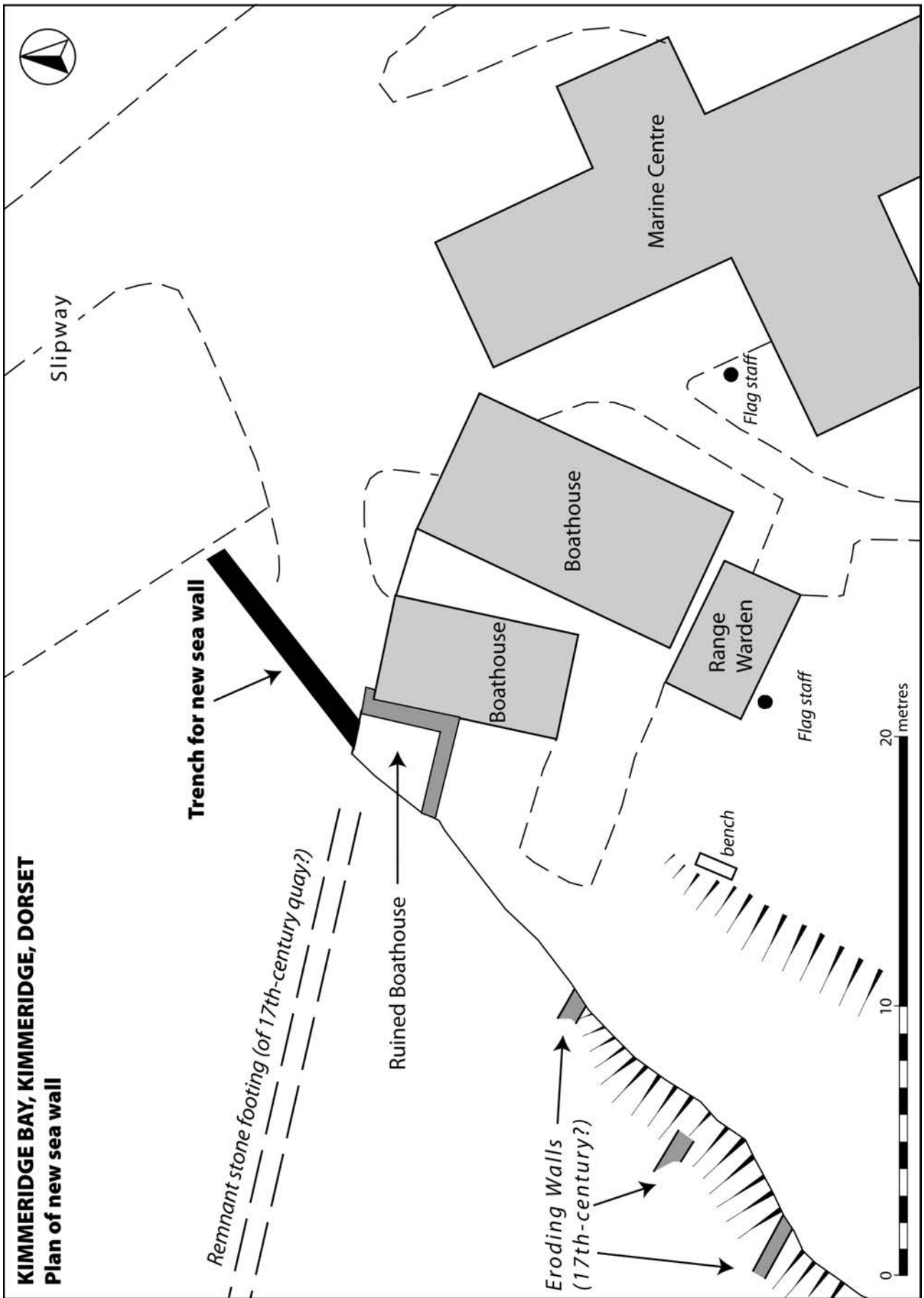


Figure 2: Plan of new sea wall trench.

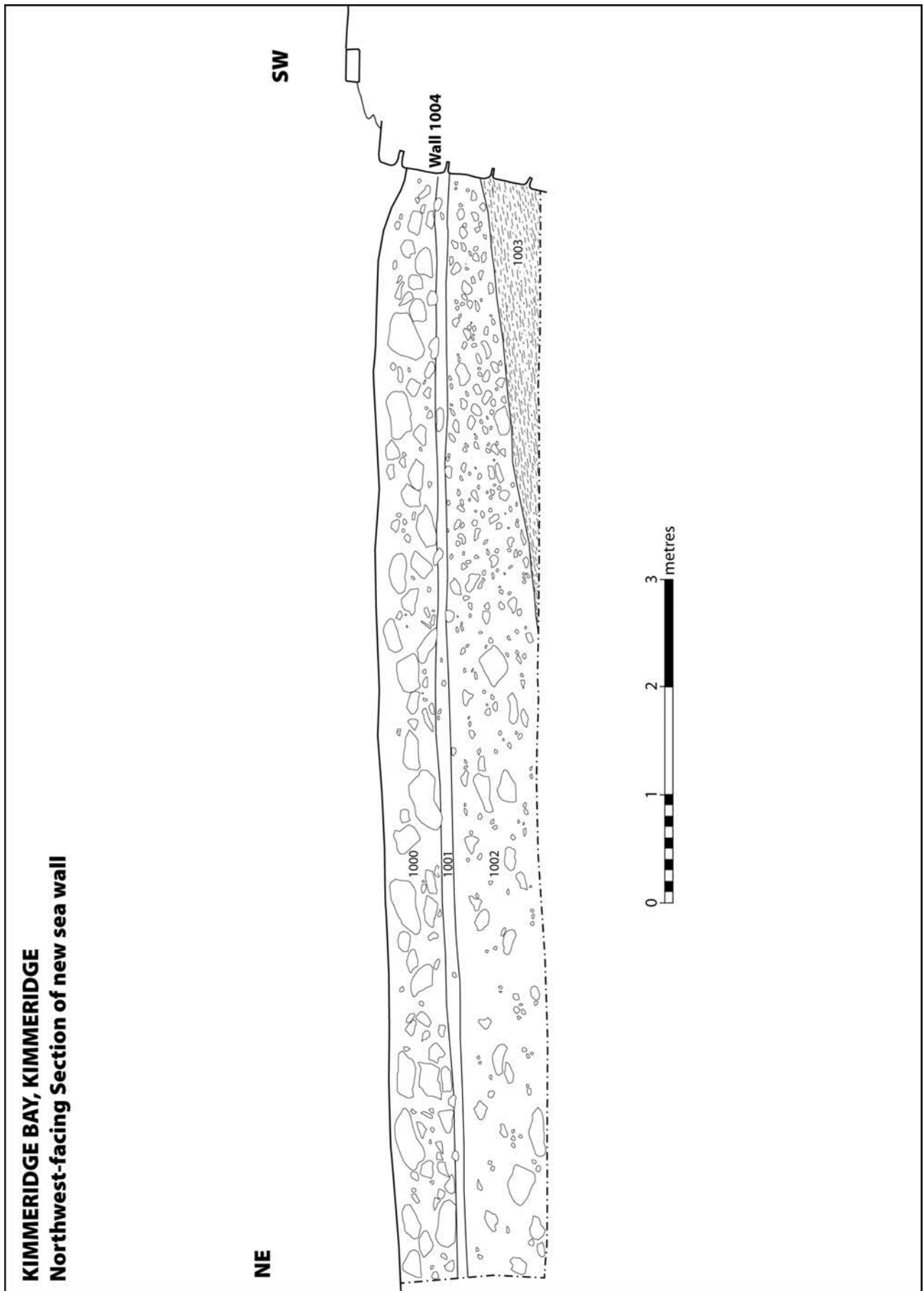


Figure 3: North-west facing section of new sea wall construction trench.

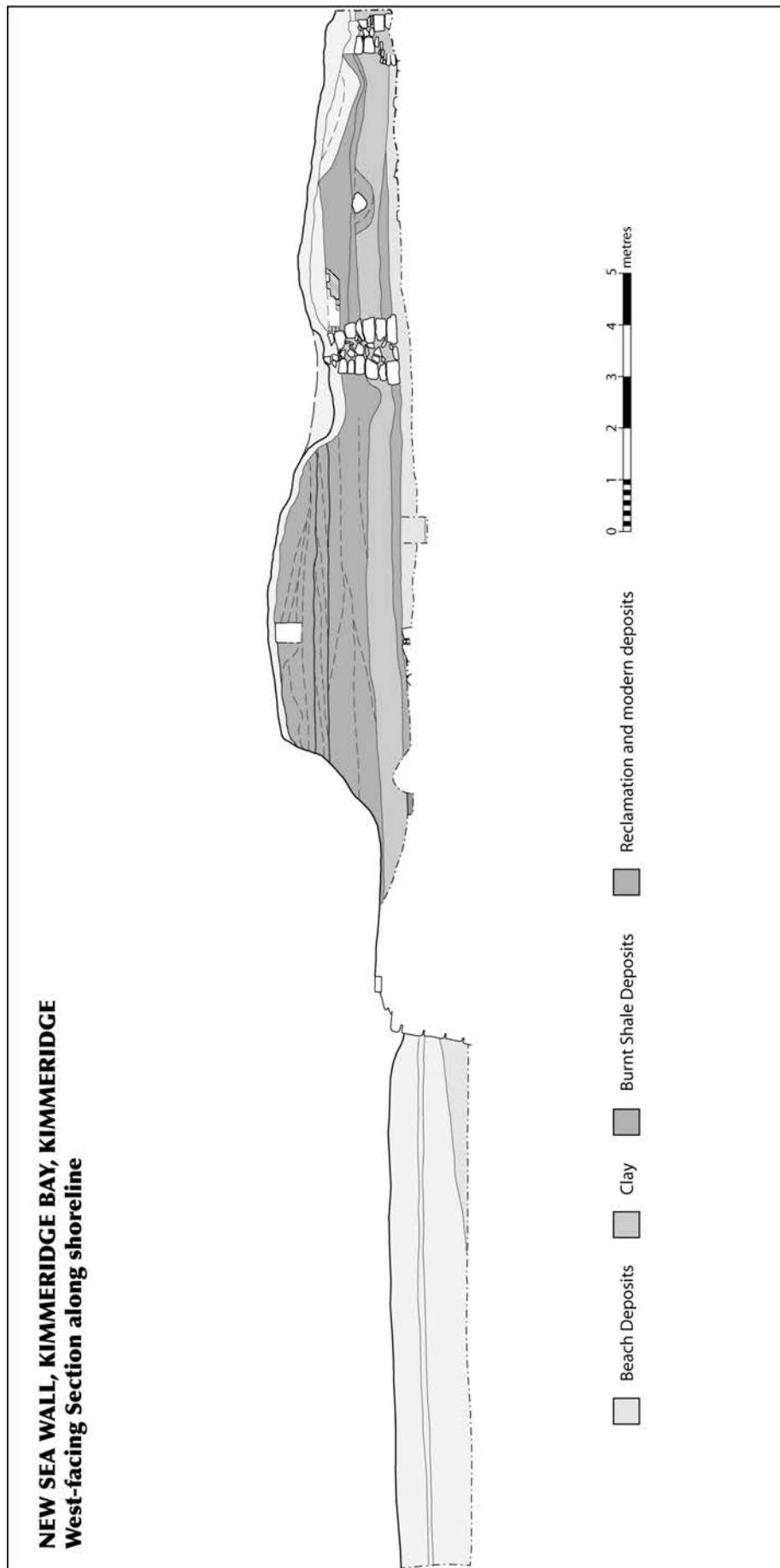


Figure 4: Simplified section showing new sea wall trench in relationship to the eroding industrial deposits to the south.



Plate 1: Overview of site location, viewed from north.



Plate 2: View southwards along construction trench. 1m scale.



Plate 3: Detail of exposed 17th century quay wall 1004. 1m scale.



Plate 4: View of deposits against face of wall 1004. 1m scale.



Plate 5: Stone alignment visible on the beach – a continuation of wall 1004.